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BUREAU OF PLANT INDUSTRY

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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XXI Number 23

December 15, 1937

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A second report of the occurrence of Verticillium wilt on peppers in this country is made by A. A. Dunlap in Connecticut, page 426. He also reports corn rust, Puccinia sorghi, on teosinte.

Harold T. Cook reports on the occurrence of vegetable diseases in Tidewater Virginia, this fall, page 426.

The Bureau of Entomology and Plant Quarantine reports on fruit disease eradication activities, page 427; blister rust in California and the western white pine region, page 428; and notes on some insect vectors of plant diseases, page 429.

November weather, page 430.

BETWEEN OURSELVES

Volume 21 of the REPORTER is concluded with this issue, except for the index number, which will appear early in the new year.

All friends of the Plant Disease Survey, as well as official collaborators, are invited to attend a conference in Indianapolis, Monday, December 27, 1937, at 7:00 P.M. at the Hotel Severin. Questions of policy and matters of common interest will be presented for discussion.

We, of the Headquarters Staff of the Survey, appreciate the cooperation which has made the 1937 REPORTER not only the largest, but we think the best volume we have ever published, and we thank you for your contributions.

With every good wish, we join in sending to all the season's greetings for a Merry Christmas and a Happy New Year.

H. A. Edson — Nellie W. Dance
Jessie I. Wood — Mary E. Dan Watson
Paul R. Miller. — Dana G. Vanderwalker

ADDITIONS TO THE CHECK LIST OF THE PARASITIC FUNGI ON CEREALS AND OTHER GRASSES IN OREGON (1935-37) 1/

Roderick Sprague
Associate Pathologist, Division of Cereal Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

Since the appearance of the preliminary list of the diseases of Oregon Gramineae in 1935 2/ a number of additional species have been collected and the specimens deposited in the Mycological Herbarium of the Department of Botany, Oregon State College, Corvallis, Oregon. Most of the Septoria spp. are listed in their tentative species assignment or left unclassified pending completion of studies at Corvallis.

The same persons who aided in the assembling of the preliminary list were instrumental in helping with the present addition. The specimens from Union, Oregon, were collected by Clyde Smith and colleagues and determined by George Fischer.

1/ Cooperative investigations by the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, and the Oregon Agricultural Experiment Station.

2/ Sprague, R. A preliminary check list of the parasitic fungi on cereals and other grasses in Oregon. U. S. Department of Agriculture, Bureau of Plant Industry, Plant Dis. Reporter 19:156-186. 1935.

LIST OF FUNGI BY HOST PLANTS

Host and fungus or disease		Where found	Literature or specimen [a]
Latin name	Common name		
AGROPYRON CRISTATUM (L.) Beauv.	CRESTED WHEATGRASS		
Epicoccum purpurascens Ehrbg.	Head mold	Astoria in plots	10,495
Smut	Covered smut	Moro, Fossil in plots	[b]
Claviceps purpurea (Fr.) Tul.	Ergot	Astoria in plots	8393
AGROPYRON DASYSTACHYUM (Hook.) Scribn. (A. lanceolatum Scribn. and Smith)	THICKSPIKE WHEATGRASS (Downy Wheatgrass)		
Ascospora graminis Lind.	Mold	Biggs	10,809 [c]
AGROPYRON INERME (Scribn. and Smith) Rydb.	BEARDLESS WHEATGRASS		
Erysiphe graminis DC.	Powdery mildew	Rufus	10,928
AGROPYRON PAUCIFLORUM (Schw.) Hitchc. (A. tenerum Vasey)	SLENDER WHEATGRASS		
Claviceps purpurea (Fr.) Tul.	Ergot	Union	10,693
Puccinia graminis Pers.	Stem rust	Union	10,692
P. montanensis Ellis	Montana rust	Union	10,695

a/ Numbers refer to specimens in the mycological herbarium of the Department of Botany, Oregon State College, Corvallis.

b/ No specimens available. Reported from Moro experiment station by D. E. Stephens and from Fossil by Arnold Ebert. Probably same smut as one in plots at Pullman, Washington, now being studied by Fischer.

c/ Associated with a species of Fumago, of doubtful pathogenicity.

AGROPYRON REPENS (L.) Beauv.	QUACKGRASS			
Claviceps purpurea (Fr.) Tul.	Ergot	Hood River	10,697	(J.R.Kienholz)
Helminthosporium tritici-repentis Died.	Leaf rot	Alsea Valley	10,752	
Puccinia rubigo-vera (DC.) Wint.	Leaf rust	Warrenton	10,312	
AGROPYRON SPICATUM (Pursh). Scrib. and Sm.	BLUE BUNCH WHEATGRASS			
Scolecotrichum graminis Fckl.	Leaf spot	Fossil	10,808	
AGROSTIS ALBA L.	REDTOP			
Claviceps microcephala (Wal.) Tul.	Ergot	Clatsop Co.	10,317	
Darluca filum (Biv.) Cast.	Parasite on crown rust	Astoria	10,735	
Mastigosporium calvum (Ell. and Davis) Sprague d/	Red leaf spot	Astoria	10,586	
Puccinia graminis Pers.	Stem rust	Astoria	10,313	
Rhynchosporium secalis (Oud.) J.J.Davis	Leaf blast	Granger	10,344	
Ustilago striaeformis (West.) Niessl.	Leaf smut	Monroe, Wells (near)	10,719	
AGROSTIS CANINA L.	VELVET BENT			
Mastigosporium calvum (Ell. and Davis) Sprague d/	Red leaf spot	Astoria in plots	10,980	
Puccinia coronata Corda	Crown rust	Astoria in plots	10,713	
P. graminis agrostidis Eriks.	Stem rust	Astoria in plots	10,713	
AGROSTIS EXARATA Trin. (A. microphylla Steud.)	SPIKE REDTOP (Western bent)			
Claviceps microcephala (Wal.) Tul.	Ergot	Warrenton	10,314	
Septoria de-gasperiana Sacc.	Leaf spot	Clifton	10,712	
AGROSTIS HALLII Vasey	WILD BENT			
Rhizoctonia solani Kühn	Leaf rot	Benton Co.	8489	
Septogloeum athrix (Eriks.) Sprague d/	Leaf blotch	Corvallis	8278	
Septoria sp.	Leaf spot	Helmick Park (Benton Co.)	8370	

d/ In press.

AGROSTIS PALUSTRIS Huds. (A. maritima Lam.)	CREEPING BENT (Seaside Bent)		
Claviceps microcephala (Wal.) Tul.	Ergot	Clatsop Co.	10,316
Fusarium culmorum (W.Sm.) Sacc.	Rootrot	Corvallis	10,447
F. nivale (Fr.) Ces.	Snow mold	Willamette Valley	10,447
Mastigosporium calvum (Ell. and Davis) Sprague d/	Red leaf spot	Coast Region	10,308
Rhizoctonia solani Kühn	Secondary rootrot	Corvallis	10,447
AGROSTIS STOLONIFERA L.	BENT		
Mastigosporium calvum (Ell. and Davis) Sprague d/	Red leaf spot	Astoria in plots	8263
AGROSTIS TENUIS Sibth.	COLONIAL BENT (Astoria bent) e/		
Helminthosporium stenacrum Drechs.	Leaf rot	Corvallis	10,747
Fusarium nivale (Fr.) Ces.	Snow mold	Corvallis	10,747
Mastigosporium calvum (Ell. and Davis) Sprague d/	Red leaf spot	Clatsop, Tillamook Cos.	10,585
Puccinia coronata Corda	Crown rust	Astoria	10,734
Septoria sp.	Leaf spot	Corvallis	10,483
AGROSTIS VERTICILLATA Vill.	WATER BENT		
Mastigosporium calvum (Ell. and Davis) Sprague d/	Red leaf spot	Astoria	8262
ALOPECURUS PRATENSIS L.	MEADOW FOXTAIL		
Claviceps (?) microcephala (Wal.) Tul.	Ergot	Astoria	10,705
Puccinia coronata Corda	Crown rust	Astoria	10,291
Puccinia graminis Pers.	Stem rust	Astoria	10,706
AMMOPHILA ARENARIA (L.) Link	EUROPEAN BEACHGRASS		
Cladosporium sp.	Leaf mold	Lake Lytle	8386
Tiarospora perforans (Rob.) v.Höhn	Leaf speckle	Tillamook Co.	10,958
Rust f/	Rust	Tillamook Co.	10,733

d/ In press.

e/ This includes the commercial variety called "Highland bent" which is said to differ in botanical varietal characters from the species proper. f/ This rust is being studied by E.B. Mains.

ANTHOXANTHUM ODORATUM L.	SWEET VERNALGRASS		
Colletotrichum graminicolum (Ces.) Wilson	Anthracnose	Tillamook and Multnomah Cos.	8264
ARRHENATHERUM ELATIUS (L.) Mert. and Koch.	TALL OATGRASS		
Ovularia pulchella (Ces.) Sacc.	Leaf spot	Bonneville	8433
Puccinia graminis Pers.	Stem rust	Astoria in plots	10,293
AVENA BARBATA Brot.	SLENDER WILD OAT		
Puccinia graminis avenae Erikss. and Henn.	Stem rust	Myrtle Point	10,436
AVENA BYZANTINA C. Koch.	RED OAT		
Fusarium poae (Pk.) Wr.	Head blast	Astoria	8308
Pseudodiscosia avenae Sprague and Johnson	Red leather leaf spot	Astoria	8266
AVENA NUDA L.	NAKED OATS		
Puccinia coronata Corda	Crown rust	Astoria in plots	10,718
Puccinia graminis avenae Erikss. and Henn.	Stem rust	Astoria in plots	10,718
AVENA SATIVA L.	OAT		
Fusarium poae (Pk.) Wr.	Head blast	Hood River, Astoria, and Warrenton	10,335
Heterosporium avenae Oud.	Leaf mold	Forest Grove	10,452
BAMBOO (GENUS INDET.)			
Mycosphaerella tulasnei Jacz.	Leaf mold and spot	Corvallis	10,628
BROMUS CARINATUS Hook. and Arn.	CALIFORNIA BROME		
Bacterium coronafaciens atropurpurea R. and G.	Chocolate spot	Corvallis	10,592
Claviceps purpurea (Fr.) Tul.	Ergot	South Benton Co.	10,731
Ustilago bullata Berk. g/	Brome smut	Medford	10,521

g/ See Fischer in Mycologia 29:408-425. 1937.

BROMUS CATHARTICUS Vahl. Ustilago bullata Berk. g/	RESCUE GRASS Brome smut	Astoria in plots	10,686
BROMUS ERECTUS Huds. Bacterium coronafaciens atropurpurea R. and G.	ERECT BROME Chocolate spot	Astoria in plots	10,711
BROMUS PACIFICUS Shear Puccinia rubigo-vera (DC.) Wint.	PACIFIC BROME Leaf rust	South Fork Alsea River	10,678
BROMUS RACEMOSUS L. Septoria bromi Sacc.	SMOOTH FLOWERED SOFT CHEAT Leaf spot	Corvallis	10,811
BROMUS RIGIDUS Roth. Bacterium coronafaciens atropurpurea R. and G.	RIPGUT GRASS Chocolate spot	Rufus	10,950
BROMUS SECALINUS L. var. VELUTINUS (Schrad.) Koch. Ustilago bullata Berk. g/	CHESS Brome smut	Corvallis	10,430
BROMUS STERILIS L. Erysiphe graminis DC.	BARREN CHEAT Powdery mildew	Corvallis	10,487
CALAMAGROSTIS INEXPANSA A. Gray Darluca filum (Biv.) Cast.	NORTHERN REEDGRASS Parasite on crown rust	Seaside	10,325
CALAMAGROSTIS NUTKAENSIS (Presl.) Steud. Coniothyrium psammae Oud. Mycosphaerella tassiana (DeNot.) Johans.	PACIFIC REEDGRASS Leaf spot Leaf spot	Taft Taft	10,817 10,817
DACTYLIS GLOMERATA L. Claviceps purpurea (Fr.) Tul. (?) Phoma sp.	ORCHARD GRASS Ergot Leaf rot	N. W. Oregon Waldport	10,527 10,595

g/ See Fischer in Mycologia 29:408-425. 1937.

DANTHONIA CALIFORNICA Boland	CALIFORNIA OATGRASS		
Helminthosporium cyclops Drechs.	Leaf mold	Tangent	8488
DESCHAMPSIA CAESPITOSA (L.) Beauv.	TUFTED HAIRGRASS		
Scolecotrichum graminis Fckl.	Leaf spot	Linn Co.	10,673
DESCHAMPSIA ELONGATA (Hook.) Munro	SLENDER HAIRGRASS		
Ascochyta graminicola Sacc.	Leaf spot	Corvallis	10,512
ECHINOCHLOA CRUS-GALLI (L.) Beauv.	BARNYARD GRASS		
(?) Epicoccum sp.	Head mold	Astoria	8374
ELYMUS ARENICOLA Scribn. and Smith	SAND RYEGRASS		
Claviceps purpurea (Fr.) Tul.	Ergot	Biggs	10,508
ELYMUS CONDENSATUS Presl	GIANT WILD RYE		
Claviceps purpurea (Fr.) Tul.	Ergot	Union and Umatilla Cos.	10,694
?Phyllosticta sp.	Blotch	Biggs	8451
Puccinia graminis Pers.	Stem rust	Union Co.	10,690
Septoria oxyspora Penz. and Sacc.	Red leaf spot	Biggs	8451
ELYMUS GLAUCUS Buckl.	BLUE WILD RYE		
?Bacterium sp.	Leaf rot	Fall Creek	10,236
Cladosporium herbarum (Pers.) Lk.	Leaf mold	Troutdale	10,945
Claviceps purpurea (Fr.) Tul.	Ergot	Benton Co.	10,730
Fusarium avenaceum (Fr.) Sacc.	On rust	Bonneville	8457
Phyllactinia corylea (Pers.) Karst. h/	Powdery mildew	Bonneville	8448
ELYMUS MOLLIS Trin.	AMERICAN DUNEGRASS		
Claviceps purpurea (Fr.) Tul.	Ergot	Warrenton	10,328
Darluca filum (Biv.) Cast.	Parasite on rust	Warrenton	10,329
Puccinia rubigo-vera (DC.) Wint.	Leaf rust	Warrenton	10,329
Septoria sp. (near S. elymi-europeae Jaap)	Black stripe	Lincoln and Tillamook Cos.	10,376

h/ This unusual grass parasite was apparently firmly attached to the host and represented both mature and developing perithecia.

ELYMUS TRITICOIDES Buckl.

ELYMUS TRITICOIDES Buckl.	BEARDLESS WILD RYE		
Claviceps purpurea (Fr.) Tul.	Ergot	La Grande	10,689
Puccinia montanensis Ellis	Montana rust	Talent	10,635
Septoria sp.	Leaf spot	Klamath Falls	10,380
FESTUCA ELATIOR L.	MEADOW FESCUE		
Cladosporium herbarum (Pers.) Lk.	Leaf mold	Granger	10,960
FESTUCA MAIREI St. Yves	FESCUE		
Cladosporium herbarum (Pers.) Lk.	Leaf mold	Granger	10,506
FESTUCA RUBRA L.	RED FESCUE		
Ascochyta graminicola Sacc.	Leaf mold	Garibaldi	8377
Cercosporella subulata Sprague	Eye spot	Halsey (Benton Co.)	10,989
Phyllachora graminis (Pers.) Fckl.	Tar spot	Astoria	8373
Septoria sp. (7-10 septate)	Leaf spot	Garibaldi	8376
FESTUCA RUBRA COMMUTATA Gaud.	CHEWINGS FESCUE		
Fusarium sp.	Scab	Astoria	8315
Septoria?tenella Cke. and Ell.	Tan leaf spot	Bay City	10,582
Ascochyta graminicola Sacc.	Leaf mold	Bay City	i/
HOLCUS LANATUS L.	VELVET GRASS		
Darluca filum (Biv.) Cast.	Parasite on rust	Waldport and Hood River	10,503
Ovularia pulchella (Ces.) Sacc.	Red leaf spot	Alsea, Tangent	10,666
Septoria sp. (Small spores)	Leaf spot	Tangent	8485
HORDEUM DISTICHON L.	TWO ROW BARLEY		
Ustilago hordei (Pers.) Lagerh.	Covered smut	near Dallas	10,756
HORDEUM NODOSUM L.	MEADOW BARLEY		
Puccinia graminis Pers.	Stem rust	Benton and Union Cos.	10,732
Urocystis agropyri (Preuss) Schroet.	Leaf smut	Linn Co.	10,749

i/ Pure culture isolation from part of Oregon 10,582.

LOLIUM MULTIFLORUM Lam.	ITALIAN RYE GRASS		
Bacterium coronafaciens atropurpurea R. and G.	Chocolate spot	W. Oregon	10,550
LOLIUM PERENNE L.	PERENNIAL RYE GRASS		
Bacterium coronafaciens atropurpurea R. and G.	Chocolate spot	Astoria	10,710
LOLIUM TEMULENTUM L.	DARNEL		
Bacterium coronafaciens atropurpurea R. and G.	Chocolate spot	Wallace Bridge	10,728
ORYZOPSIS HYMENOIDES (Reem. and Schult.) Ricker	INDIAN RICEGRASS		
Puccinia scaber (Ell. and Ev.) Barth.	Rust	Celilo	8441
PANICUM MILIACEUM L.	BROOM CORN MILLET		
Bacterium panici Elliot	Leaf blight	Seaside	10,332
PANICUM PACIFICUM Hitchc. and Chase	PACIFIC PANICUM		
Cercospora fusimaculans Atk.	Leaf blotch	Mary's Peak	9898
PHALARIS ARUNDINACEA L.	REED CANARYGRASS		
Septoria sp.	Leaf spot	Astoria	10,370
PHLEUM PRATENSE L.	TIMOTHY		
Heterosporium phlei Gregory	Purple leaf spot	Astoria	10,744
PHRAGMITES COMMUNIS Trin.	COMMON REED		
Puccinia phragmitis (Schum.) Körn.	Rust	Young's Bay, Astoria	10,683
Scolecotrichum maculicola Ell. and Kell.	Eyespot	Young's Bay, Astoria	10,683
POA COMPRESSA L.	CANADA BLUEGRASS		
Cladosporium herbarum (Pers.) Lk.	Leaf mold	Alsea	10,755
Septoria sp.	Leaf blotch	Ranier	10,946

POA HOWELLII Vasey and Scribn.			
Ascochyta graminicola Sacc.	HOWELL BLUEGRASS Leaf mold	Lower Columbia River	10,080
POA JUNCIFOLIA Scribn.			
(P. brachyglossa Piper)	ALKALI BLUEGRASS		
Septoria oxyspora Penz. and Sacc.	Leaf spot	Friend, Rufus	10,760
Mycosphaerella tassiana (DeNot.) Johans.	Leaf rot	Rufus (near)	10,941
POA NEVADENSIS Vasey	NEVADA BLUEGRASS		
Claviceps sp.	Ergot	Seneca	10,696
POA PRATENSIS L.	KENTUCKY BLUEGRASS		
Gloeosporium graminum Rostr.	Anthracnose	S. Fork Alsea River and Irish Bend (Benton Co.)	10,665
POA SCABRELLA (Thurb.) Benth.	DESERT BLUEGRASS		
Pleospora karstenii Berl. and Vogl.	Leaf and culm mold	Tygh Ridge	10,759
POA TRIVIALIS L.	ROUGH BLUEGRASS		
Helminthosporium poae Baudys	Leaf spot	Astoria	10,330
Puccinia poae-sudeticae (West.) Jørstad	Bluegrass rust	Astoria	10,330
POLYPOGON MONSPELIENSIS (L.) Desf.	RABBITFOOT GRASS		
Erysiphe graminis DC.	Powdery mildew	Biggs	8439
SECALE CEREALE L.	RYE		
Tilletia sp.	Bunt	Central Morrow Co.	j/
SETARIA ITALICA (L.) Beauv.	FOXTAIL MILLET		
Epicoccum purpurascens Ehrbg.	Leaf mold	Corvallis	10,497

j/ The specimens collected by B. B. Bayles and the writer were sent to Pullman, Washington.

SETARIA VIRIDIS (L.) Beauv. Bacterium holci Elliot	GREEN BRISTLEGRASS Leaf blight	Seaside	10,488
SITANION HYSTRIX (Nutt.) J.G.Smith Ascochyta graminicola Sacc.	SQUIRRELTAIL Leaf mold	Mount Hood	10,770
STIPA COLUMBIANA Macoun var. NELSONII (Scribn.) Hitch. Septoria (?) calamagrostidis (Lib.) Sacc.	COLUMBIA NEEDLEGRASS Leaf rot	Long Creek, Blue Mts.	10,761
TRISETUM CANESCENS Buckl. Puccinia graminis Pers.	TALL DOWNY TRISETUM Stem rust	Astoria	10,294
TRITICUM DICOCCUM Schrank. var. FARRUM Bayle Septoria tritici Desm.	VERNAL AND KHAPLI EMMER Leaf blotch	Benton Co.	10,726
TRITICUM POLONICUM L. Mycosphaerella tulasnei Jacz.	POLISH WHEAT Leaf rot and blotch	Granger	10,679
TRITICUM TURGIDUM L. Septoria tritici Desm.	POLLARD WHEAT Leaf blotch	Granger	10,680

TOBACCO DISEASES IN WESTERN KENTUCKY IN 1937

E. M. Johnson

A survey for diseases was made in about 200 fields of dark fire-cured, Burley and One Sucker tobaccos in Todd, Logan, Christian, Trigg, and Caldwell Counties in the summer of 1937. The diseases observed are listed as follows:

Number of fields in which diseases were observed during summer of 1937.

Disease	Dark fire-cured Number of fields	One Sucker Number of fields	Burley Number of fields
Mosaic	81	61	36
Angular leaf spot	34	45	24
Wildfire	32	44	19
Black root-rot	0	1	1
Brown root-rot	8	7	8
Fusarium wilt	0	7	4
Streak (virus)	2	3	2
Frog-eye	2	10	14
Frenching	3	3	3

In this area mosaic (virus) as usual was one of the serious diseases of tobacco in the field. An extensive survey of One Sucker, Burley, and dark fire-cured tobacco fields made just prior to harvest again showed the importance of preventing early infection by refraining from the use of barn-cured tobacco during plant-bed operations. The results may be summarized as follows:

	Number of fields	Percentage of mosaic
Workmen used barn-cured tobacco during setting and later	85	20.90
Workmen used manufactured tobacco	44	1.60
Workmen used no tobacco	33	.55

In a few fields in tobacco in 1936, suckers developed from stubble early in the spring. Initial mosaic infection was higher in three fields than in fields similarly handled but not in tobacco in 1936. Overwintering of tobacco is rare in this region.

Wildfire (Bacterium tabacum) and angular leaf spot (B. angulatum) were rather prevalent in plant beds throughout this area as previously reported. Infection continued in the field but no serious damage occurred

until after the rains of late summer. A moderate outbreak of these diseases in mid-August caused serious damage in many fields of One Sucker and less serious damage in fields of dark fire-cured and Burley. In many fields both diseases were present and since each was causing the same type of injury to maturing tobacco no attempt was made to distinguish the amount of damage caused by each disease. The total amount of damage from both diseases for representative fields follows:

Type of tobacco	Percentage of damage
Dark fire-cured:	10, 5, 15, 5, 5, T*, 1, 20, 15, 8, 20, T, 0, 25, 0, 20, 5, 10, 15, 25, 5, 0, 0, 4, 0, T, 25, 10, 10, 25, 2, 25, 8, 10.
One Sucker:	T, 10, 10, 15, 10, 0, 0, 25, 2, 20, 1, 10, 0, 10, 50, 20, 25, T, 2, 25, T, 0, T, 10, 15, 10, 50, 0, 10, 25, 10, 25, 15, 20, 25, 25, 5, 20, 2, 30, 25, 20, 50, 20, 10, 10, 10, 15, 10, T, 5, 20.
Burley:	T, T, 5, 0, T, T, 10, T, T, 10, T, T, T, 0, 10, 10, T, T, 25, 10, 15, 6.

*T = under 1 percent.

In a few instances growers were forced to cut the tobacco. This was especially true in heavily-infected One Sucker fields. Growers who used two Bordeaux treatments on their plant beds early had little or no damage from these diseases late in the summer in any of the three tobacco types grown.

Brown root-rot (non-parasitic) was found in a number of fields and may have been present in many others. So many fields were injured by wire worms soon after setting that it was difficult to diagnose brown root-rot without examining large numbers of plants. The disease was unusually prevalent over the entire State.

Fusarium wilt (F. oxysporum nicotianae) was observed in a few fields of One Sucker and Burley but there were rarely more than two or three affected plants in a field. The greatest number found in any field was twonty.

Frog-eye (Cercospora nicotianae) caused slight damage to One Sucker tobacco in a few fields. In some instances but for the black fruiting bodies of the fungus, the spots might have been confused with wildfire. Several growers confused frog-eye and wildfire on One Sucker.

Black root-rot (Thielaviopsis basicola) was seen in only two fields both of which had been limed rather recently.

Frenching (non-parasitic) occurred only on limed soils or those that were near enough to limestone roads to receive limestone by wind or water. (Kentucky Agricultural Experiment Station).

REPORTS ON PLANT DISEASES IN COLORADO

YELLOWS-RESISTANT CABBAGE VARIETIES FOR COLORADO: In cooperation with the Department of Horticulture, tests involving 52 varieties of cabbage were made on yellows (Fusarium conglutinans) sick soil in Weld and Adams counties during the past growing season. In these tests were included all the yellows-resistant varieties of cabbage. Standard susceptible varieties were used as checks. The purpose of these tests was to determine the degree of yellows resistance, type, quality, and yields of the resistant varieties of cabbage under Colorado conditions. Of the yellows-resistant varieties, Marion Market, an early cabbage, Globe No. 1, a midseason, and Wisconsin Hollander No. 8, a late variety, showed promise of being suitable for Colorado conditions. These variety tests will again be conducted next season. (W. J. Henderson).

PHYTOPHTHORA BLIGHT OF PEPPER: Pepper blight (Phytophthora capsici) was especially severe in Fremont county during the summer of 1937. Fields showed losses varying from a trace to 50 percent of the crop. Maximum losses were incurred in low fields with minimum damage in higher ground. Blight is unquestionably the limiting factor in pepper production in this county. As usual, traces of blight were observed in most fields in the Arkansas Valley district, although nothing was observed in this region to compare with the Fremont county epiphytotic. (Wm. A. Kreutzer).

AN UNDETERMINED ROOT ROT OF CORN: Root rot of corn is becoming evident in Colorado fields. The causal organism has not as yet been identified. In 1937, several hundred preliminary corn seed treatment tests were conducted with farmers in 10 counties of Colorado. The seed was treated with mercurial dust and an average of 19.6 percent increase in stand was obtained in 60 of the tests in the different counties. (W. J. Henderson).

CONTROL OF PEACH MOSAIC: Peach mosaic is being controlled in Colorado by removal of diseased trees. At the peak of eradication during the summer of 1935, 30,457 new cases of diseased trees were taken out. By careful survey and persistent eradication carried on by the State Experiment Station, the State Bureau of Plant and Insect Control and U. S. Department of Agriculture Bureau of Entomology and Plant Quarantine cooperating, the number of new cases in 1936 was reduced to 9,835. For the current year the number of new cases has been further reduced to 3,517 diseased trees. (E. W. Bodine).

ROOT ROT OF SWEET PEAS IN GREENHOUSE: During the past season a root rot of sweet peas has been found in a Denver greenhouse given largely to sweet pea growing. When the infected roots were crushed spores of Thielavia could be clearly seen. From 50 to 75 percent of the plants in one range showed evidence of the disease. The soil in which the plants were growing was obtained from the mountains west of Denver. (J. L. Forsberg). (Colorado State College and Experiment Station, Dec. 1).

RUST ON TEOSINTE AND WILT OF PEPPER IN CONNECTICUT

A. A. Dunlap

The corn rust, Puccinia sorghi, was found on teosinte, Euchlaena mexicana, growing near Zea mays upon which the rust was also found. The collection was made on the plant-breeding grounds at Mount Carmel.

After the report of Verticillium wilt of pepper, Capsicum annum, in Southern California by Rudolph and Snyder (P.D.R. 21:404), it seems fitting to mention an apparently similar disease which was first noticed in Connecticut in 1937. The wilt occurred in a few widely separated fields and affected 70 percent or more of the plants. The entire plant presented a drooping appearance and the lower branches became defoliated. There was an abundant rainfall while the wilt was progressing. Crop loss was practically complete in the affected fields. The disease was found on Worldbeater and California Wonder varieties on one farm and on an unknown variety in a different locality. In culture, Dr. McCormick obtained the growth of Verticillium. (Connecticut Agricultural Experiment Station).

OCCURRENCE OF VEGETABLE DISEASES IN TIDEWATER VIRGINIA, THIS FALL

Harold T. Cook

POTATO: Late blight (Phytophthora infestans) was found October 28 on Red Bliss potatoes in the same field in which it was found last year in Princess Anne county.

SNAP BEANS: Powdery mildew (Erysiphe polygoni) was observed in the fall crop on September 14, but did not become abundant until about the second week in October. The damage from this disease varied considerably from one field to another. In some fields heavy losses resulted from reduced yield and pod damage while in other fields the damage was only slight. The disease was easily controlled by some growers with from one to three applications of dusting sulphur.

In a variety test conducted at this Station Idaho, Wisconsin, and U.S. No. 5 Mosaic Resistant Refugee beans were extremely resistant to powdery mildew. These observations were confirmed under much more severe conditions in the greenhouse in regard to the Idaho and Wisconsin Mosaic Resistant Refugees. U. S. No. 5 was not planted in the greenhouse test. Tests conducted with seeds supplied by Dr. L. L. Harter indicate that the powdery mildew resistance is inherited from Corbett Refugee which is one of the parents of all three of the above varieties. (Harold T. Cook and T. J. Nugent, Dec. 1).

Rust (Uromyces phaseoli typica) was observed in the fall crop on September 14. It caused severe damage in some fields, but was not so generally distributed nor so destructive as in 1936.

SPINACH: Downy mildew (Peronospora effusa) was not found until nearly November this year and serious damage has been confined to a few fields.

Fusarium wilt (Fusarium sp.) was widely distributed in the Norfolk trucking area and in some fields it reduced the stand to such an extent that the fields had to be replanted. In all cases it was most severe on early fall planted spinach. (Virginia Truck Experiment Station, Norfolk).

FRUIT DISEASE ERADICATION ACTIVITIES

Reported by Bureau of Entomology and Plant Quarantine (December 1).

CITRUS CANKER IN TEXAS: Isolated swamp lands in the Galveston-Brazoria areas in Texas, in which citrus canker (Bacterium citri) has been found in recent years, were sought out, inspected, and about 44,000 abandoned and hedge trees destroyed. No citrus canker was found in October.

PEACH MOSAIC IN MEXICO: California plant-pest-control officials report that a recent limited inspection in Mexico of that part adjoining the infected area in San Diego County, California, showed that the disease was present in the adjoining Mexican area.

PROGRESS IN CONTROL OF PEACH MOSAIC AND PHONY PEACH DISEASES: Inspection for the phony peach and peach mosaic diseases (virus) has been completed in all States and field work is now concentrated on destroying diseased trees not removed at the time of inspection. Of the 33,000 diseased peach trees which have been destroyed this season, 14,500 were infected with phony peach, and 18,500 with peach mosaic diseases. All known infected trees have been removed from Arkansas, Illinois, Kentucky, Missouri, Utah, and South Carolina. The eradication of abandoned peach trees is going forward in nine other States. In Georgia, phony peach inspection was resumed on September 29, with eight Federal and nine State inspectors. The third survey in the peach mosaic infected area in Colorado this season resulted in finding only 116 diseased trees. In El Paso County, Texas, and the Rio Grande Valley in New Mexico, cooperation in most instances is good and from 75 to 80 percent of the mosaic-infected trees are being removed.

BLISTER RUST IN CALIFORNIA AND THE WESTERN WHITE PINE REGION

Reported by Bureau of Entomology and Plant Quarantine (December 1).

SCOUTING FOR BLISTER RUST IN CALIFORNIA; The annual work of scouting for white pine blister rust (Cronartium ribicola) in California was begun about the first of August. In 1936 five infections, one on sugar pine and Ribes and the others on Ribes only, were found in northwestern California, a few miles south of the Oregon boundary. These were the first discoveries of blister rust in California. This year infection on Ribes nevadense was found during the very first days of scouting on the Trinity National Forest, about 100 miles south of the discoveries of 1936. R. nevadense had never before been found infected in its native habitat. One bush, growing along a small mountain stream and scarcely eight feet from the water and at an elevation of about 4,500 feet, carried the rust. It was in good association with sugar pine. Notwithstanding a careful search of the vicinity, no more diseased bushes could be found. However, within 2 weeks four more infections on P. nevadense and R. cruentum were located about 10 miles to the south, and subsequently two infected R. sanguineum were found about 125 miles south of the Oregon-California line. A scouting party operating in the northern part of the Klamath forest found blister rust generally distributed in every drainage basin examined and principally in basins where no rust was observed last year. This indicates possible undiscovered pine infection centers probably to the north in Oregon, and exceptionally favorable conditions for the spread of the rust during the spring. Early in September another scouting party was sent into the Lassen National Forest, at the northern end of the Sierra Nevada. Shortly afterwards blister rust was discovered there on R. roezli on Mill Creek a few miles south of Lassen Volcanic National Park, and about 120 miles south of the Oregon boundary. This is the first known occurrence of blister rust in the Sierra Nevada, and affords the first tangible proof of the threat to the fine stands of sugar pine growing on its western slope. Thus the presence of white pine blister rust has been established in both the Coast Range and Sierra Nevada Mountains of northern California, at about equal distances south of the Oregon-California border. It should be clearly understood that many undiscovered Ribes infections undoubtedly exist both within and outside the area found infected this season. All scouting operations in the sugar pine region were terminated the latter part of October because of inclement weather and defoliation of the Ribes. (See also P.D.R. 20:220-221).

PINE DISEASE SURVEY IN THE WESTERN WHITE PINE REGION: During the summer a pine disease survey has been carried on in the western white pine region. The returns have now been tabulated from sample strips worked in 24 drainages of the St. Joe Forest area in Idaho. These drainages contain 182,700 acres of white pine land and 128,965 trees up to about 20 feet in height were examined in the stream and upland types. This work resulted in the finding of 16,831 infected trees, or 13 percent of those examined. These trees had a total of 70,474 cankers, or an average of 54.6 cankers per 100 trees examined. Last year's survey showed an average of about 4.4

percent infection in this region and the jump to an average of 13 percent this year indicates the rapidity with which the disease is attacking the white pine. Young trees, especially, are being severely attacked and considerable losses in unprotected reproduction areas are inevitable. (See also P.D.R. 20:173-174).

NOTES ON SOME INSECT VECTORS OF PLANT DISEASES

Reported by Bureau of Entomology and Plant Quarantine (December 1).

NEW DISTRIBUTION RECORDS FOR SMALLER EUROPEAN ELM BARK BEETLE: Scolytus multistriatus Marsh. is considered the most important insect vector of the Dutch elm disease fungus (Ceratostomella ulmi) in the United States. It was first found in the vicinity of Boston, Massachusetts, in 1909. Until 1936 the insect was known to occur in only two distinct areas. One covered parts of eastern Massachusetts and southeastern New Hampshire. The other included parts of western Connecticut, southeastern New York, eastern Pennsylvania, northern Delaware, and northern New Jersey. In 1936 scouts connected with the Bureau's Dutch elm disease eradication unit found S. multistriatus at Parkersburg, West Virginia. Since then that unit and the Morristown, New Jersey, laboratory have cooperated in getting additional information concerning the distribution of the species. C. W. Collins, Morristown, reports as follows concerning the results of this scouting: "S. multistriatus has been found to be well established in a large contiguous territory including parts of West Virginia, Ohio, Indiana, and Kentucky, and bordering on the Ohio River from East Liverpool, Ohio, to Evansville, Indiana. The known infested area lies mostly in Ohio and West Virginia. At some points in Ohio it extends back from the Ohio River approximately 50 miles and at some points in West Virginia approximately 60 miles. Two other infested areas have been found. One is about 225 square miles in extent and lies just south of Pittsburgh, Pennsylvania. The other area includes six localities where the beetle has been found in the vicinity of Martinsburg, West Virginia. Five of these localities are in West Virginia and one is in Maryland."

SPARSE STANDS OF RUSSIAN-THISTLE FAVOR BREEDING OF BEET LEAFHOPPER: In an investigation to determine the relationship between density of stand of Russian-thistle (Salsola pestifer A. Nels) and its suitability for the development of populations of the beet leafhopper [vector of the curly-top virus], D. E. Fox, of the Twin Falls, Idaho, Laboratory, found that extremely dense stands of Russian-thistle dried prematurely and therefore were not suitable for the development of large populations of Eutettix tenellus Bak., whereas in areas where this favorite host plant of the insect was less abundant the population of E. tenellus increased progressively until fall. In stands where the Russian-thistle grew sparsely, the individual plants remained green and suitable as a host plant throughout the entire summer and early fall.

WILD PEPPERGRASS PRINCIPAL SUMMER HOST OF BEET LEAFHOPPER IN ARIZONA DESERT: V. E. Romney, of the Phoenix, Arizona, laboratory, reports that extensive field observations during 1937 have corroborated observations in 1936 in demonstrating that one of the peppergrasses, Lepidium thurberi Wooten, is the principal host plant for Eutettix tenellus Bak. that reinfests other wild host plants in the Arizona desert areas after the early summer dry season. Mr. Romney has determined that L. thurberi is abundant in southern and southeastern Arizona and is the only plant, with the possible exception of very limited areas of Russian-thistle (Salsola pestifer A. Nels.), that sponsors E. tenellus during the early summer dry season. This plant is known to extend along the Mexican border for approximately 175 miles. Its distribution in Mexico is not known.

NOVEMBER WEATHER

(From the Weekly Weather and Crop Bulletin for the week ending December 7).

While November brought some abnormally low temperatures, especially to the extreme southern portions of the country, the month, as a whole, was only moderately colder than normal. Around the 20th of the month temperatures as low as zero occurred as far south as central Iowa and freezing to New Orleans, Louisiana, and Tampa, Florida; toward its close freezing weather again occurred over most southern sections.

Figure 59 shows that the temperatures, as a whole, averaged from 2° to as many as 5° below normal rather generally east of the Rocky Mountains, except in parts of the Lake region and the Northeast, where somewhat more than normal warmth prevailed. The greatest minus departures from normal occurred from the Ohio and middle Mississippi and lower Missouri Valleys southward. West of the Rocky Mountains temperatures averaged above normal in practically all sections, the greatest plus departures being in the Great Basin where the month was from 4° to 6° warmer than normal.

Precipitation was irregularly distributed geographically and most of the country had less than the usual November amount. Figure 60 shows that the monthly totals were unusually large over a rather extensive northwestern area from northern Nevada and northern California northward, with most stations reporting more than one and one-half times the normal amount. Heavy rains were general, also, in a narrow belt along the Atlantic Ocean from northern Florida to southern New England, the totals locally running up to as much as three times the November normal. Most of the western Cotton Belt also had generous to heavy rainfall.

On the other hand, large sections of the country had marked deficiencies, especially the central and southern Great Plains, an extensive southwestern area, and the Appalachian Mountain and Ohio Valley districts. Much

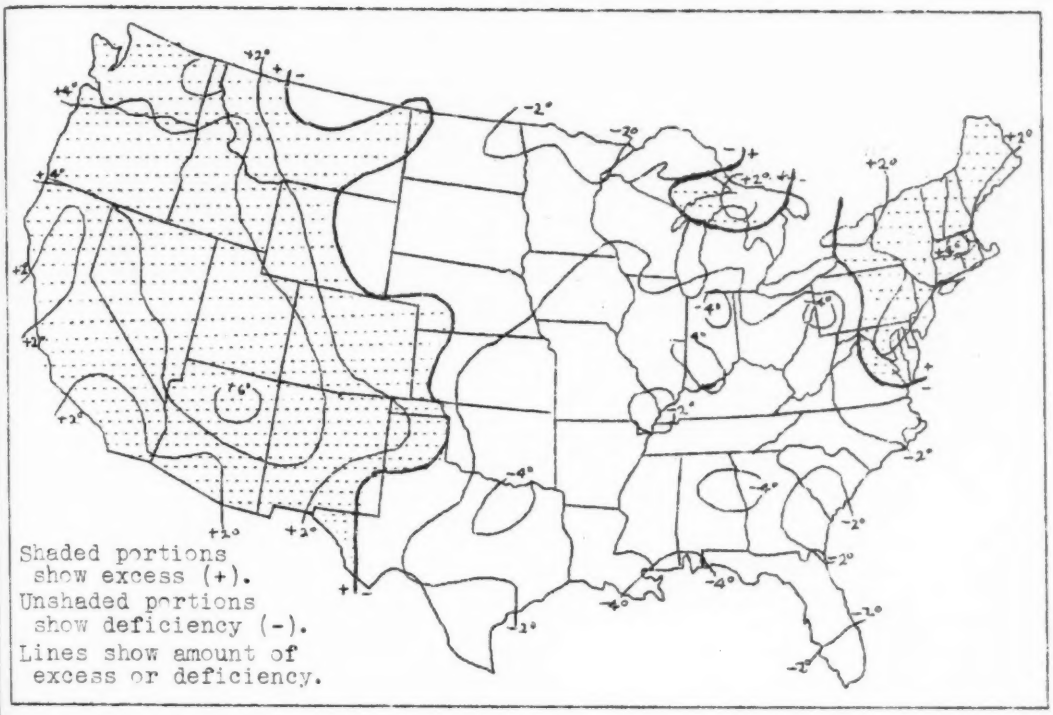

Fig. 59. Departure of Mean Temperature from the Normal for November 1937.

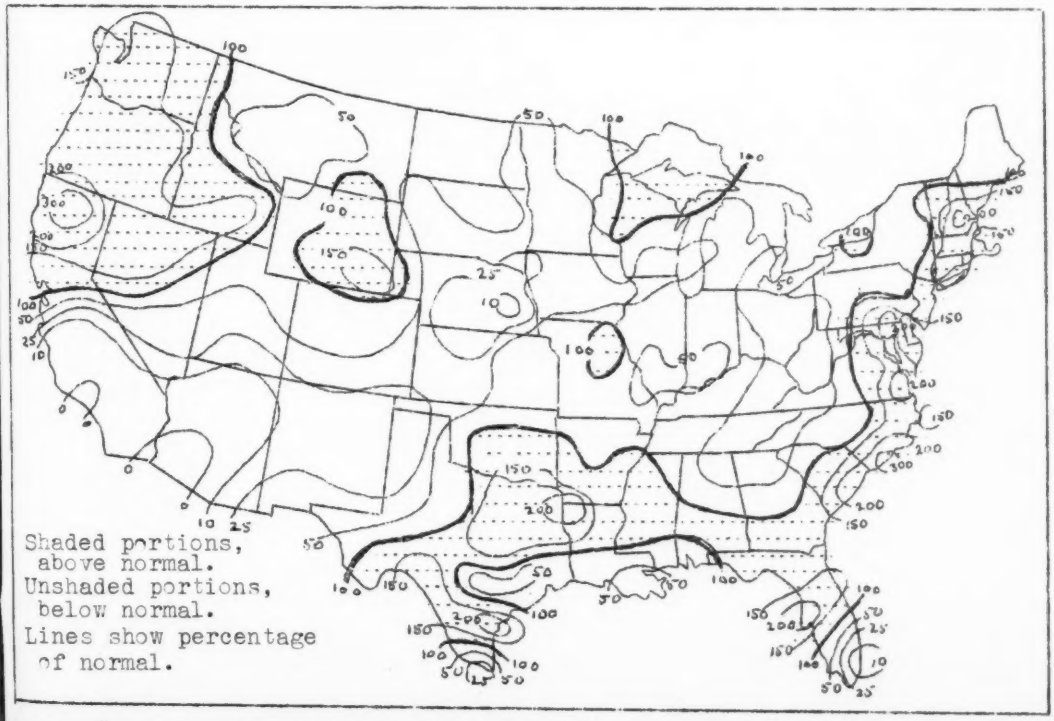

Fig. 60. Percentage of Normal Precipitation for November 1937.

of the central Great Plains had only one-fifth to one-third of normal, while less than one-fourth of normal was received in a large southwestern section. The marked unevenness of rainfall distribution is shown by a comparison of the Atlantic coast with a belt extending from the eastern Lake region southward to northern Georgia and northwestern Alabama where less than half the normal occurred; also in the Pacific area, central and southern California had practically no rainfall, while heavy amounts were received in northern California.